AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions, and listings, of claims in the captioned patent application:

Listing of Claims:

1. (Currently Amended) An implantable hearing prosthesis ~~medical device~~, comprising:

an output circuit; and

a power management system configured to supply power to the output circuit comprising:

a plurality of rechargeable batteries;

first conversion means for converting a supply voltage to a battery voltage; and

switch ~~means to~~ means for selectively ~~connect~~ connecting a desired one of the plurality of rechargeable batteries to the first conversion means for charging of the desired one of the batteries and ~~to connect a selected one or more~~ for selectively connecting a selected one of the plurality of batteries to the output circuit to enable the selected one ~~or more~~ of the batteries to be discharged through the output circuit.

2. (Cancelled)

3. (Currently Amended) The device ~~the device~~ of claim 1, wherein the power management system further comprises:

~~a second~~ second conversion means connected between the output circuit and the switch means for converting the voltage of the selected one ~~or more~~ of the batteries to a voltage for use by the output circuit thereby discharging the selected one ~~or more~~ of the batteries.

4. (Cancelled)

5. (Currently Amended) The device ~~the device~~ of claim 1, wherein the first conversion means is also connected between the output circuit and the switch means for converting the voltage of the selected one ~~or more~~ of the batteries to a voltage for use by the output circuit.

6. (Currently Amended) The device ~~the device~~ of claim 1, wherein the switch means comprises a plurality of switches enabling connection of the desired one ~~or more~~ of the plurality of rechargeable batteries to the first conversion means and of the selected one of the ~~or more~~ batteries to the output circuit.

7. (Currently Amended) The device ~~the device~~ of claim 1, further a comprising:

a control unit configured to control the switch means to ~~either~~ enable the charging of the desired one of the plurality of batteries and the discharging of the selected one ~~or more~~ of the batteries based on the state of charge of the plurality of batteries.

8. (Previously Presented) The device of claim 1, wherein the power management system further comprises a multiplexer means having an input connected to one terminal of each of the plurality of rechargeable batteries to enable the voltage signals pertaining to each battery to be selected and forwarded to an analog to digital converter.

9. (Previously Presented) The device of claim 8, wherein the power management system further comprises a shunt impedance means connected to a second terminal of each of the plurality of rechargeable batteries to measure the charge current of each battery, represented as a voltage drop across the shunt impedance means.

10. (Previously Presented) The device of claim 9, wherein the shunt impedance means is connected in parallel to a shunt switch to short circuit the shunt impedance means when the shunt impedance is not in use.

11. (Previously Presented) The device of claim 10, wherein the power management system further comprises an amplification means connected between the shunt impedance means and the multiplexer means to amplify the voltage drop across the shunt impedance means to the input voltage range of the analog to digital converter.

12-13. (Cancelled)

14. (Previously Presented) The device of claim 10, wherein the power management system further comprises a register for storing information pertaining to each battery.

15. (Previously Presented) The device of claim 14, wherein said information comprises any one or more of charge status of each battery in the plurality of rechargeable batteries, error status of each battery in the plurality of rechargeable batteries or a flag identifying whether a battery in the plurality of rechargeable batteries has been disabled from being charged or discharged.

16-18. (Cancelled)

19. (Currently Amended) The device ~~the device~~ of claim 3, wherein the second conversion means enables discharging of the selected one ~~or more~~ of the batteries such that charge in the selected one ~~or more~~ of the batteries is forwarded to the output circuit.

20-21. (Cancelled)

22. (Currently Amended) The device ~~the device~~ of claim 1, wherein the first conversion means includes an inductive means, one or more switches and a switch control unit to enable charging of the desired one of the plurality of rechargeable batteries.

23. (Currently Amended) The device ~~the device~~ of claim 3, wherein the second conversion means includes an inductive means, one or more switches and a switch control unit to enable discharging of the selected one ~~or more~~ of the batteries.

24. (Cancelled)

25. (Currently Amended) A method of managing the supply of power to an output circuit of an implantable hearing prosthesis ~~medical device~~ comprising a plurality of rechargeable batteries, the method comprising the steps of:

converting, ~~with a~~ with an input voltage converter circuit, a supply voltage to a battery voltage;

selectively connecting, using ~~switch means~~ a switch matrix, a desired one of the plurality of rechargeable batteries to the input voltage converter circuit to charge the desired one of the plurality of batteries; and

connecting a selected one ~~or more~~ of the plurality of rechargeable batteries, using the switch ~~means~~ matrix, to the output circuit to enable the selected one ~~or more~~ of the batteries to be discharged through the output circuit.

26. (Currently Amended) The method of claim 25, wherein the selected one ~~or more batteries are~~ of the batteries is discharged to the output circuit by converting the voltage output from the selected one ~~or more~~ of the batteries to a voltage for use by the output circuit.

27. (Currently Amended) The method of claim 25, ~~further comprising the step of:~~ wherein the switch matrix comprises:

~~providing the switch means in the form of a bank of switches,~~ a plurality of switches having at least one switch for each rechargeable battery of the plurality of rechargeable batteries.

28. (Currently Amended) The method of claim 25, further comprising the step of:

~~controlling the switch means to enable~~ enabling the charging of the desired one of the plurality of batteries and the discharging of the selected one ~~or more~~ of the batteries based on information on each of the rechargeable batteries stored in a register.

29. (Previously Presented) The method of claim 28, further comprising the steps of:

multiplexing and measuring parameters, such as battery voltage, battery charge and battery current, pertaining to each of the rechargeable batteries for storage as digital values in the register.

30. (Previously Presented) The method of claim 29, further comprising the step of:

maintaining a record in the register on the state of charge of each of the rechargeable batteries.

31. (Previously Presented) The method of claim 30, further comprising the step of:

providing an optimum range, as a percentage value of the state of charge, within which each rechargeable battery is charged and/or discharged.

32. (Currently Amended) The method of claim 31, further comprising the step of:

disabling charging of ~~a battery~~ the desired one of the plurality of rechargeable batteries where the charge of the ~~battery~~ desired one of the batteries is above a first percentage limit of the state of charge.

33. (Currently Amended) The method of claim 31, further comprising the step of:

terminating the discharging of ~~a battery~~ the selected one of the plurality of rechargeable batteries where the charge of the ~~battery~~ selected one of the batteries is below a second percentage limit of the state of charge.

34. (Currently Amended) An implantable hearing prosthesis ~~medical device,~~ comprising:

an output circuit; and

a power management system configured to supply power to the output circuit comprising:

a plurality of rechargeable batteries;

an input voltage converter circuit configured to convert a supply voltage to a battery voltage; and

a switch matrix configured to selectively connect a desired one of the plurality of rechargeable batteries to the input voltage converter circuit for charging of the desired one of the batteries and to selectively connect a selected one ~~or more~~ of the plurality of batteries to the output circuit to enable the selected one of the ~~or more~~ batteries to be discharged through the output circuit.

35. (Cancelled)

36. (Currently Amended) The device of claim 34, wherein the ~~wherein~~ power management system further comprises:

an output voltage converter circuit connecting the output circuit and the switch matrix and configured to convert the voltage of the selected one ~~or more~~ of the batteries to a voltage for use by the output circuit, thereby discharging the selected one ~~or more~~ of the batteries.

37. (Cancelled)

38. (Currently Amended) The device of claim 34, wherein the input voltage converter is also connected between the output circuit and the switch matrix for converting the voltage of the selected one ~~or more~~ of the batteries to a voltage for use by the output circuit.

39. (Currently Amended) The device of claim 34, wherein the switch matrix comprises a plurality of switches enabling connection of the desired one ~~or more~~ of the rechargeable batteries to the input voltage converter circuit and of the selected one ~~or more~~ of the batteries to the output circuit.

40. (Currently Amended) The device of claim 34, further comprising:

a control unit configured to control the switch matrix to ~~either~~ enable the charging of the desired one of the plurality of batteries and the discharging of the selected one ~~or more~~ of the batteries based on the state of charge of the plurality of batteries.

41. (Previously Presented) The device of claim 40, wherein the power management system further comprises:

a multiplexer having an input connected to one terminal of each of the rechargeable batteries to enable the voltage signals pertaining to each of the batteries to be selected and forwarded to an analog to digital converter.

42. (Previously Presented) The device of claim 41, wherein the power management system further comprises:

a shunt resistor connected to a second terminal of each of the plurality of rechargeable batteries to measure the charge current of each battery, represented as a voltage drop across the resistor.

43. (Previously Presented) The device of claim 42, wherein the shunt resistor is connected in parallel to a shunt switch to short circuit the resistor when the resistor is not in use.

44. (Previously Presented) The device of claim 43, wherein the power management system further comprises:

an amplifier connected between the shunt resistor and the multiplexer to amplify the voltage drop across the resistor to the input voltage range of the analog to digital converter.

45. (Previously Presented) The device of claim 44, wherein the analog to digital converter measures individual battery voltage of any one of the rechargeable batteries and converts the measured voltage to a digital value.

46. (Previously Presented) The device of claim 44, wherein the analog to digital converter measures the voltage drop across the shunt resistor and converts the measured voltage into a digital value.

47. (Currently Amended) The device of claim 46, further comprising:
a register ~~for storing~~ configured to store information pertaining to each battery.

48. (Previously Presented) The device of claim 47, wherein said information comprises any one or more of charge status of each battery in the plurality of rechargeable batteries, error status of each battery in the plurality of rechargeable batteries or a flag identifying whether a battery in the plurality of rechargeable batteries has been disabled from being charged or discharged.

49. (Previously Presented) The device of claim 48, wherein the control unit is in communication with the register and with the analog to digital converter for processing signals and data from the analog to digital converter and from the register.

50. (Currently Amended) The device of claim 49, wherein the control unit is configured to periodically sense ~~senses~~ the presence of a voltage at the input to the switch matrix.

51. (Currently Amended) The device of claim 50, wherein the control unit is configured to select ~~selects~~ a battery of the plurality of rechargeable batteries to be charged or discharged on the basis of information stored in the register.

52. (Cancelled)

53. (Currently Amended) The device of claim 34, wherein the input voltage converter circuit includes an inductor, one or more switches and a switch control unit to enable charging of the desired one of the plurality of rechargeable batteries.

54. (Currently Amended) The device of claim 36, wherein the output voltage converter circuit includes an inductor, one or more switches and a switch control unit to enable discharging of the selected one of the batteries. ~~battery~~.